

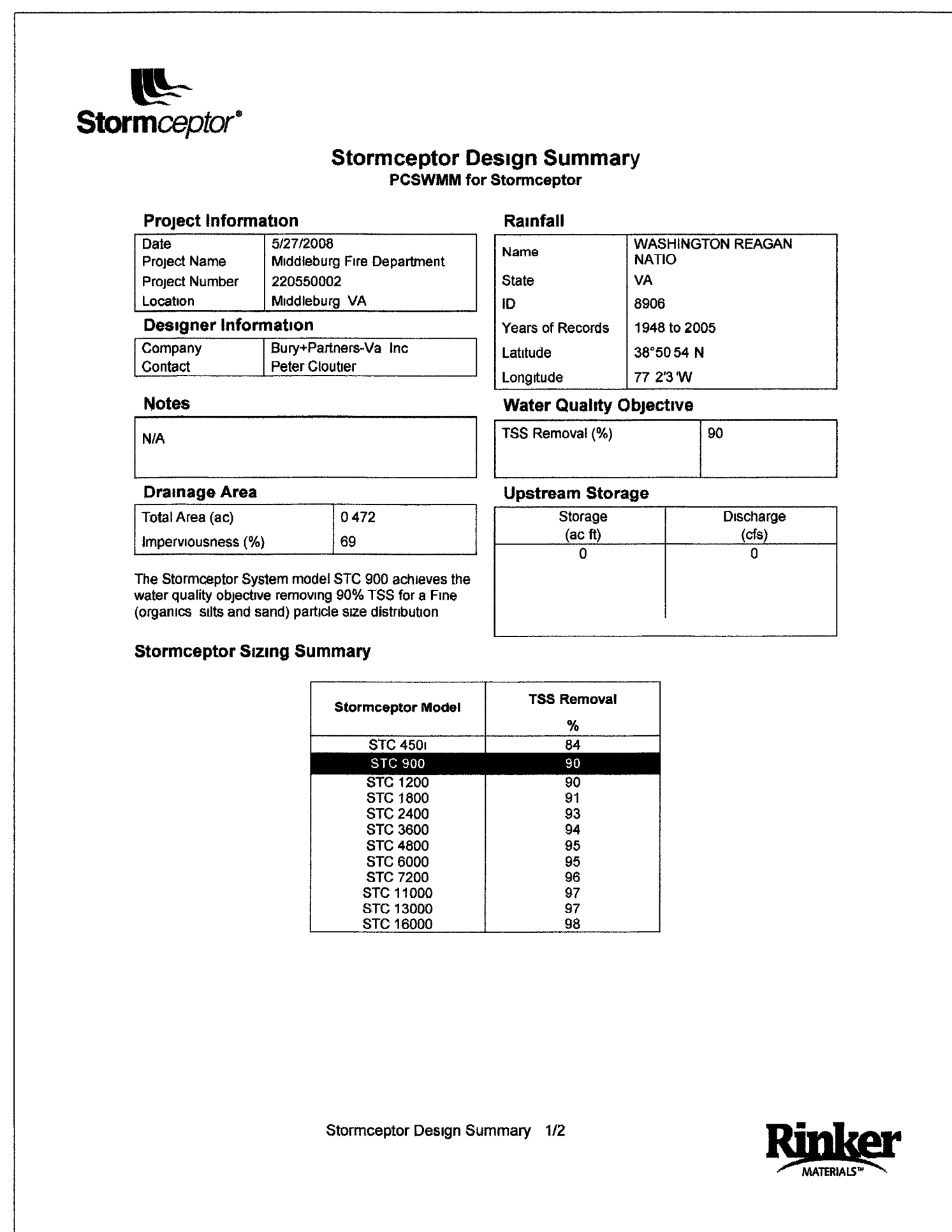
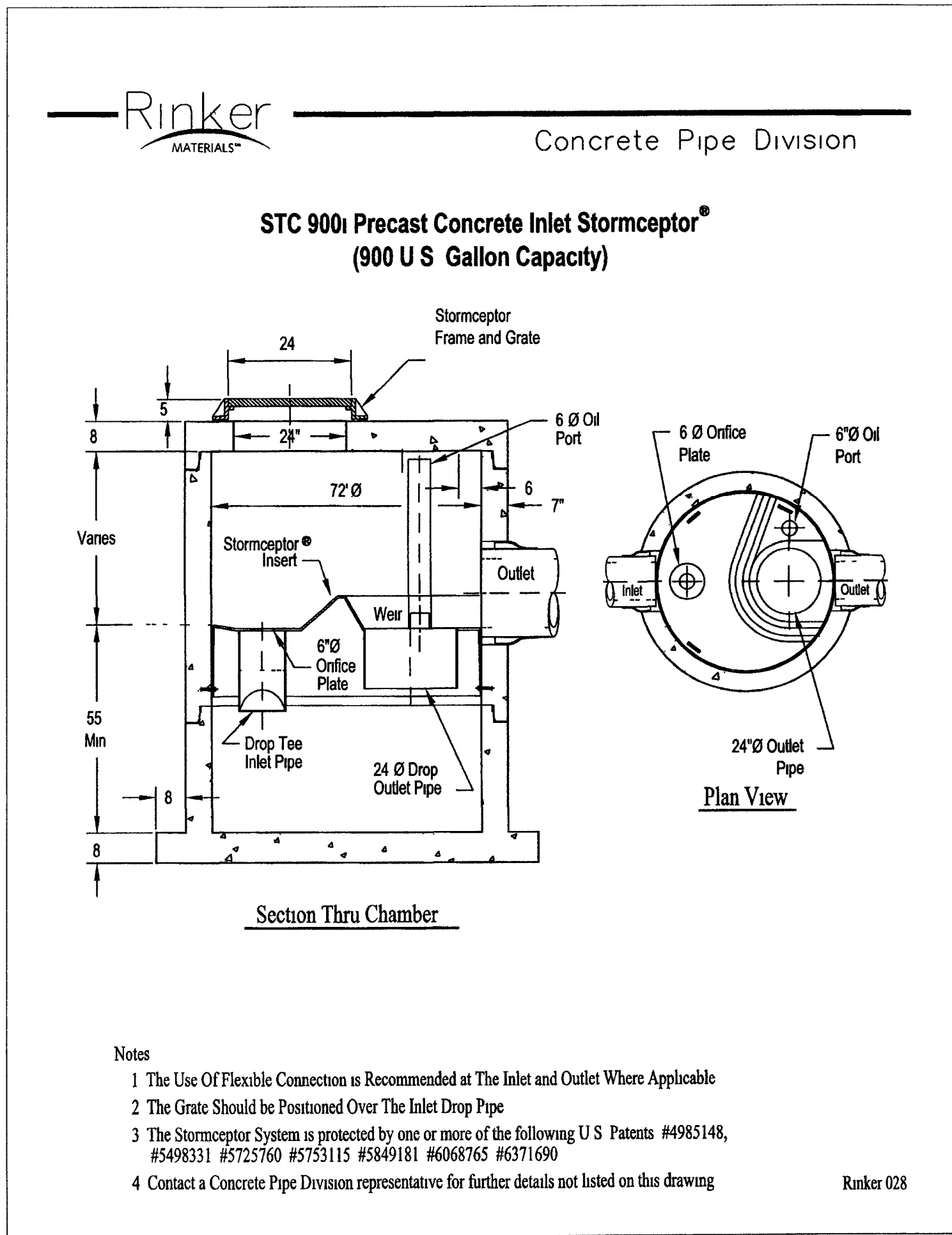
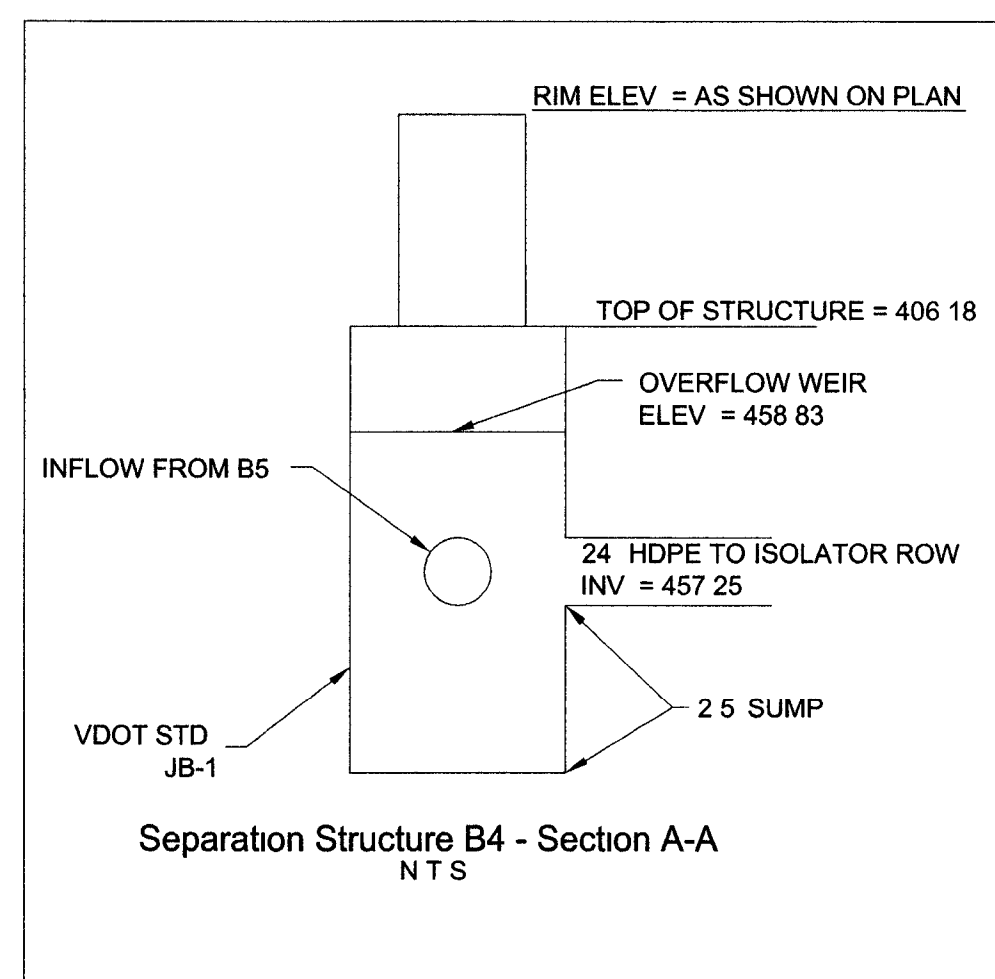
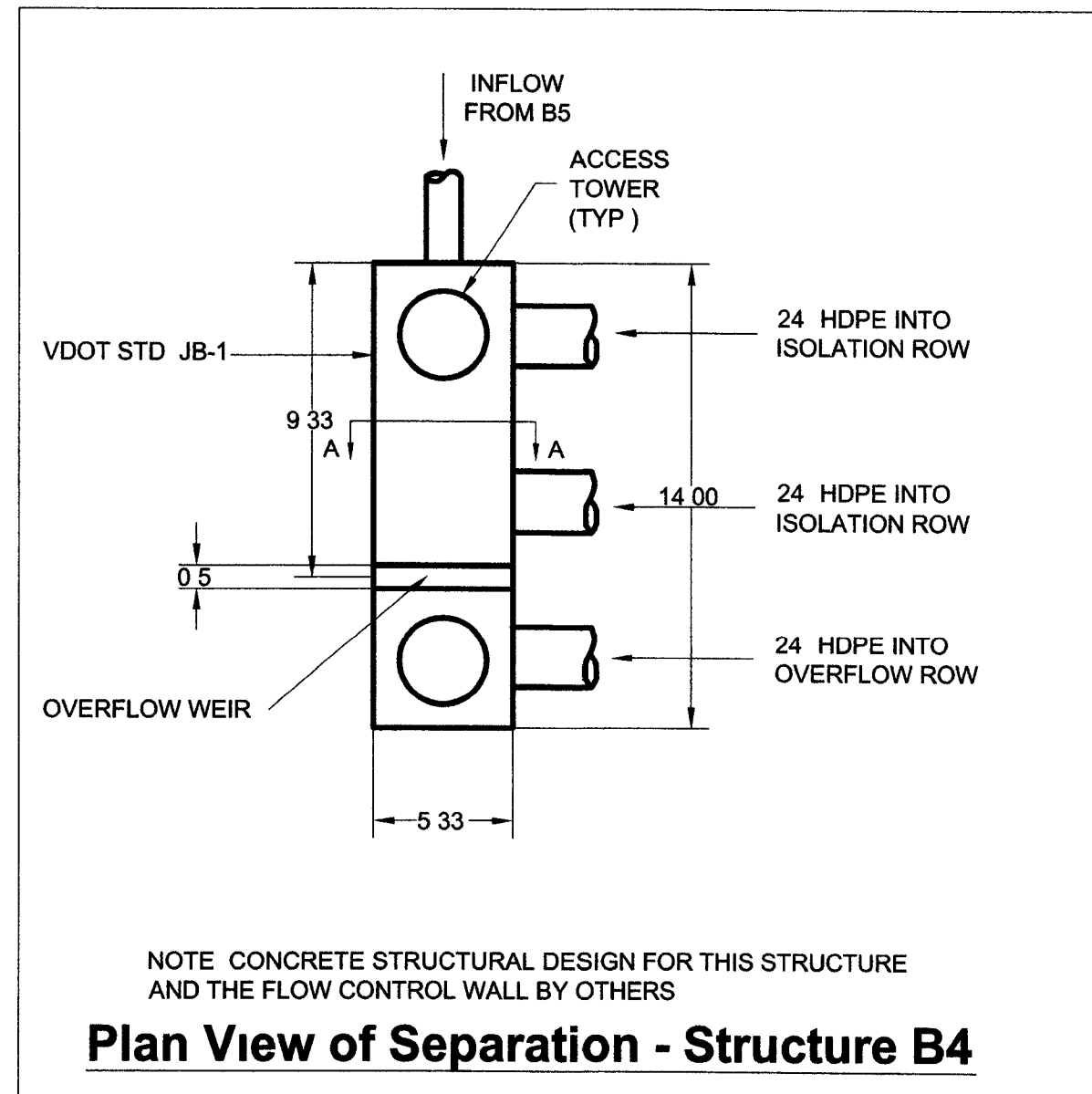
Storage vs. Elevation Computations					Storage vs. Discharge Computations							
Stage (ft)	Elevation (ft)	StormTech SC 740 Accumulated (cu ft)	Stone Course Below to either side of the SC 740 Chamber Accumulated (cu ft)	Above and 3' (cu ft)	Total Storage (cu ft)	Outfall Barrel Head (ft)	Outfall Barrel Flow (cfs)	BMP Orifice Head (ft)	BMP Orifice Flow (cfs)	Head Over Weir (ft)	Flow Over Weir (cfs)	Total Flow (cfs)
0.00	459.75	0.00	0.00	0.00	0.00	0.25	3.52	0.25	0.05	0.00	0.00	0.05
0.25	459.99	0.00	3.38	6.76	239.50	0.50	3.54	0.50	0.07	0.00	0.00	0.07
0.50	459.25	0.00	6.76	13.52	473.20	0.75	2.75	0.75	0.09	0.00	0.00	0.09
0.75	457.50	6.58	7.51	15.09	898.30	1.00	2.53	1.00	0.10	0.00	0.00	0.10
1.00	457.75	12.97	8.34	16.34	1,491.70	1.25	3.99	1.25	0.12	0.00	0.00	0.12
1.25	458.00	19.09	9.27	17.36	1,985.20	1.50	5.03	1.50	0.13	0.00	0.00	0.13
1.50	458.25	24.89	10.34	18.23	2,488.10	1.75	5.90	1.75	0.14	0.00	0.00	0.14
1.75	458.50	30.29	11.56	19.85	2,923.50	2.00	6.68	2.00	0.15	0.00	0.00	0.15
BMP Elevation (3 320 c u f t) = 458.72												
2.00	458.75	35.22	12.97	20.97	3,373.30	2.25	7.33	2.25	0.16	0.03	0.00	0.16
2.25	459.00	39.54	14.63	22.24	3,791.90	2.50	7.95	2.50	0.17	0.28	0.11	0.28
2.50	459.25	43.05	16.60	23.24	4,176.20	2.75	8.52	2.75	0.17	0.53	0.30	0.47
2.75	459.50	45.41	19.05	24.24	4,512.20	3.00	9.06	3.00	0.18	0.78	0.53	0.72
3.00	459.75	45.90	22.24	25.62	4,769.80	3.25	9.57	3.25	0.19	1.03	0.81	1.00
3.25	460.00	45.90	25.62	27.00	5,006.40	3.50	10.05	3.50	0.20	1.28	1.12	1.32
3.50	460.25	45.90	29.00		5,243.00	3.75	10.51	3.75	0.20	1.53	1.47	1.67

Notes

- StormTech SC 740 detention system
 - Number of Chambers = 70
 - Invert in from storm system = 457.25
 - Bottom of detention system = 456.75
- The storage information shown in columns 3 and 4 was taken from Table 7 on page 12 of the StormTech Design Manual
- The values shown in column 4 assume a void ratio of 40% for stone course
- Isolation row(s)
 - Invert = 457.25
 - 10 year peak flow = 7.31 cu ft/sec
 - Discharge per isolation chamber = 0.50 cu ft/sec
 - Required number of isolation chambers = 15
 - Provided number of isolation chambers = 16
- Outfall barrel
 - Diameter = 1.25 ft
 - Length = 50 ft
 - Invert In = 456.50
 - Invert Out = 456.00
 - Culvert Inlet Control Constant c = 0.0398
 - Culvert Inlet Control Constant Y = 0.6700
 - Culvert Inlet Control Constant W = 0.0050
 - Entrance Loss Coefficient = 0.50
 - Acceleration of Gravity = 32.16 ft/sec²
 - Manning's Coefficient = 0.013

Equations used to determine outfall barrel flow are based on Inlet vs. Outlet control conditions from Chapter 8 VDOT Drainage Manual

- Overflow Weir
 - Length = 0.25 ft
 - Invert = 458.72
- Underdrain
 - Invert = 456.75
 - 10 year peak flow = 7.31 cu ft/sec
 - Discharge per linear foot of 4 slotted pvc drain = 0.16 cu ft/sec
 - Required length of underdrain = 45.68 ft
 - Provided length of underdrain = 5.00 ft
- BMP De-watering Orifice
 - Invert Out = 456.50
 - Diameter = 1.00 in



SWM/BMP MAINTENANCE PLAN

RESPONSIBLE PARTIES

THE FEE SIMPLE OWNERS OF THE PARCEL BEING DEVELOPED THAT THESE FACILITIES WILL BE SERVING WILL BE RESPONSIBLE FOR THEIR MAINTENANCE

MAINTENANCE

ALL FACILITIES SHOULD BE CHECKED AFTER EVERY STORM EVENT TO ENSURE THAT NO DEBRIS HAS BLOCKED ANY OF THE FLOW CONTROLS. ESPECIALLY THE FLOW CONTROLS ON THE FLOW CONTROL WALL FOR THE UNDERGROUND DETENTION FACILITIES. THESE FACILITIES SHOULD ALSO BE INSPECTED WITHIN 72 HOURS OF THE STORM EVENT IN ORDER TO ENSURE THAT BMP STORAGE VOLUME IS PROPERLY DEWATERING. IF THE FACILITY IS NOT DEWATERING THEN THE FLOW CONTROLS NEED TO BE CHECKED FOR BLOCKAGE. THE FACILITY SHOULD BE CLEARED OF ANY SEDIMENT BUILDUP AT LEAST ONCE A YEAR. THE RESILIENT WEDGE GATE VALVE SHOULD BE EXERCISED AND LUBRICATED ON AT LEAST AN ANNUAL BASIS. FOLLOW ANY MAINTENANCE ADVICE THE MANUFACTURER OF THE VALVE MAY HAVE FOR INFREQUENTLY USED VALVES SUCH AS THIS JETVAC MAINTENANCE IS REQUIRED IF SEDIMENT HAS BEEN COLLECTED TO AN AVERAGE DEPTH IF 3 INCHES OR MORE INSIDE THE ISOLATOR ROWS. FIXED NOZZLES DESIGNED FOR CULVERTS OR LARGE DIAMETER PIPE CLEANING ARE PREFERABLE. REAR FACING JETS WITH AN EFFECTIVE SPREAD OF AT LEAST 45° ARE BEST. MOST JETVAC REELS HAVE A MINIMUM OF 400 FEET OF HOSE ALLOWING MAINTENANCE OF AN ISOLATOR ROW UP TO 50 CHAMBERS LONG. THE JETVAC PROCESS SHALL ONLY BE PERFORMED ON THE ISOLATOR ROWS THAT HAVE AASHTO CLASS 1 WOVEN GEOTEXTILE OVER THEIR ANGULAR BASE STONE.

EASEMENTS AND ACCESS

THE FACILITY IS ENCLOSED IN A STORMWATER MAINTENANCE EASEMENT. ACCESS TO THE FACILITY WILL BE HANDLED THROUGH ACCESS EASEMENTS SHOWN ON THESE PLANS.

DISPOSAL OF SEDIMENTS

THE SEDIMENTS REMOVED FROM THIS FACILITY SHALL BE TESTED IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL REQUIREMENTS AND THEN DISPOSED OF AS REQUIRED BASED ON THE TEST RESULTS AND/OR STATE AND LOCAL REQUIREMENTS.

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**MIDDLEBURG VOLUNTEER FIRE DEPARTMENT BUILDING ADDITION
FINAL SITE PLAN
BLUE RIDGE DISTRICT
TOWN OF MIDDLEBURG, VIRGINIA**

SWM/BMP Facility Details

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SCALE N/A
DATE 11-16-07
DRAWN BY PJC/BP
DESIGNED BY PJC
REVIEWED BY MS
PROJ. NO. 220550002

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